

<p>(51) International Patent Classification⁶ : C12Q 1/68, 1/70, C12N 13/00, C07H 21/02, 21/04, A01N 43/04</p>	<p>A1</p>	<p>(11) International Publication Number: WO 99/67427</p> <p>(43) International Publication Date: 29 December 1999 (29.12.99)</p>
<p>(21) International Application Number: PCT/US99/14486</p> <p>(22) International Filing Date: 24 June 1999 (24.06.99)</p> <p>(30) Priority Data: 09/104,295 24 June 1998 (24.06.98) US</p> <p>(71) Applicant: VIROLOGIC, INC. [US/US]; 270 East Grand Avenue, South San Francisco, CA 94080 (US).</p> <p>(72) Inventors: PETROPOULOS, Christos, J.; 415 Garcia Avenue, Half Moon Bay, CA 94019 (US). WHITCOMB, Jeanette; 633 Highland Avenue #4, San Mateo, CA 94401 (US).</p> <p>(74) Agent: WHITE, John, P.; Cooper & Dunham LLP, 1185 Avenue of the Americas, New York, NY 10036 (US).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
<p>(54) Title: MEANS AND METHODS FOR MONITORING NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITOR ANTIRETROVIRAL THERAPY AND GUIDING THERAPEUTIC DECISIONS IN THE TREATMENT OF HIV/AIDS</p>		
<p>(57) Abstract</p> <p>This invention relates to antiviral drug susceptibility and resistance tests to be used in identifying effective drug regimens for the treatment of human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS) and further relates to the means and methods of monitoring the clinical progression of HIV infection and its response to antiretroviral therapy, particularly nucleoside reverse transcriptase inhibitor therapy using phenotypic susceptibility assays or genotypic assays.</p>		

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/14486

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS, DIALOG, BIOSIS, DISSERTATION ABSTRACTS ONLINE, EMBASE, MEDLINE, AIDSLINE, human immunodeficiency virus or HIV, antiviral, nucleoside, reverse transcriptase, inhibitor, antiretroviral, mutation, codon, D4T

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/14486

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C12Q 1/68, 1/70; C12N 13/00; C07H 21/02, 21/04; A01N 43/04
US CL : 435/5, 6, 173.3; 536/23.1, 23.72; 514/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/5, 6, 173.3; 536/23.1, 23.72; 514/44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KREBS et al. Single-Step Kinetics of HIV-1 Reverse Transcriptase Mutants Responsible for Virus Resistance to Nucleoside Inhibitors Zidovudine and 3-TC. Biochemistry. June 1997, Vol. 36, No. 33, pages 10292-10300, especially page 10299, column 1, second paragraph.	1-31
Y	KLEIM et al. In Vitro Selection for Different Mutational Patterns in the HIV-1 Reverse Transcriptase Using High and Low Selective Pressure of the Nonnucleoside Reverse Transcriptase inhibitor HBY 097. Virology. February 1997, Vol. 231, No. 1, pages 112-118, especially Abstract and Table 2.	1-31



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
B earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

13 SEPTEMBER 1999

Date of mailing of the international search report

21 OCT 1999

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/14486

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	AHLUWALIA et al. 2', 3' -didehydro-3'-deoxythymidine: Regulation of its Metabolic Activation by Modulators of Thymidine-5'-triphosphate Biosynthesis. Molecular Pharmacology. March 1996, Vol. 50, No. 1, pages 160-165, especially Abstract and Result.	1-31

Patient 770 Clones: +/- T69SSG + V75M

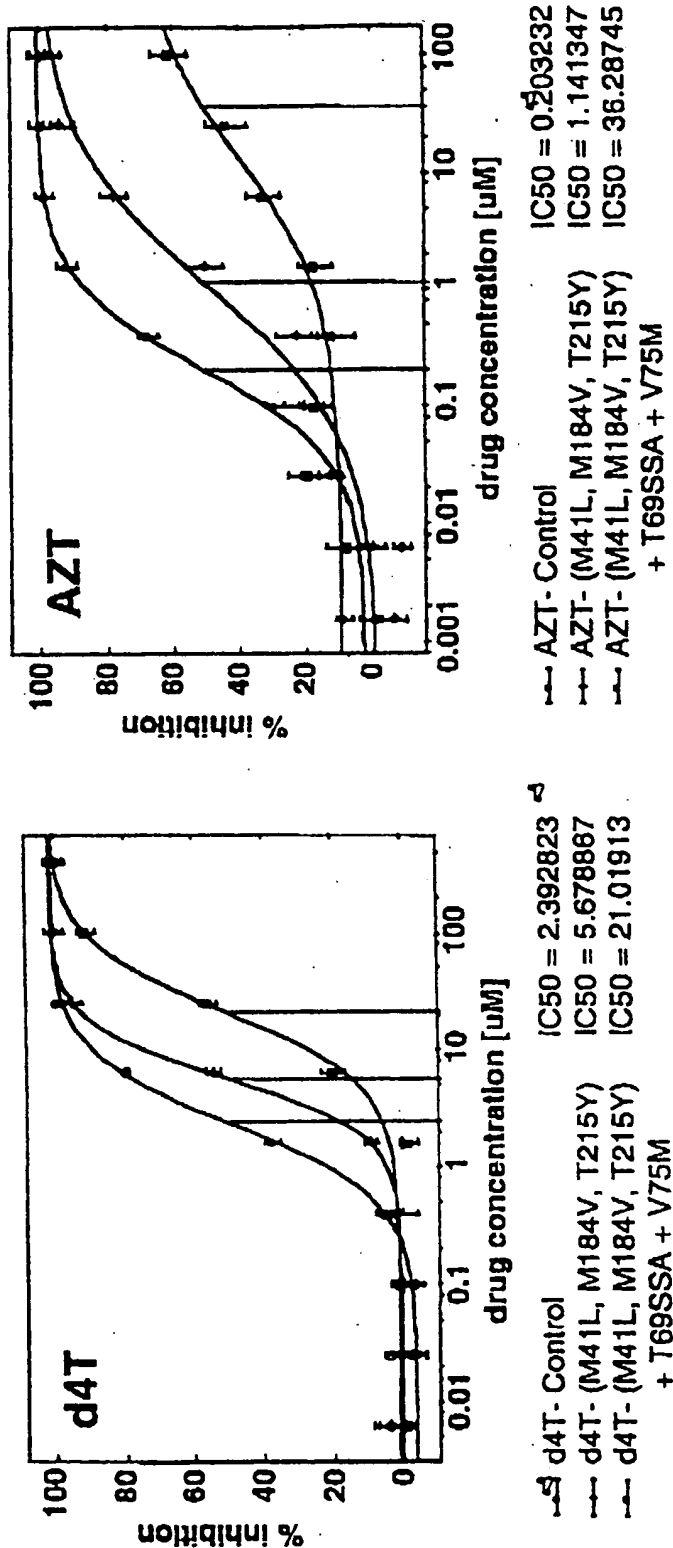


Figure 12

Site Directed Mutants: Multiple Mutations at RT Amino Acids 41, 62, 69, 184, 215

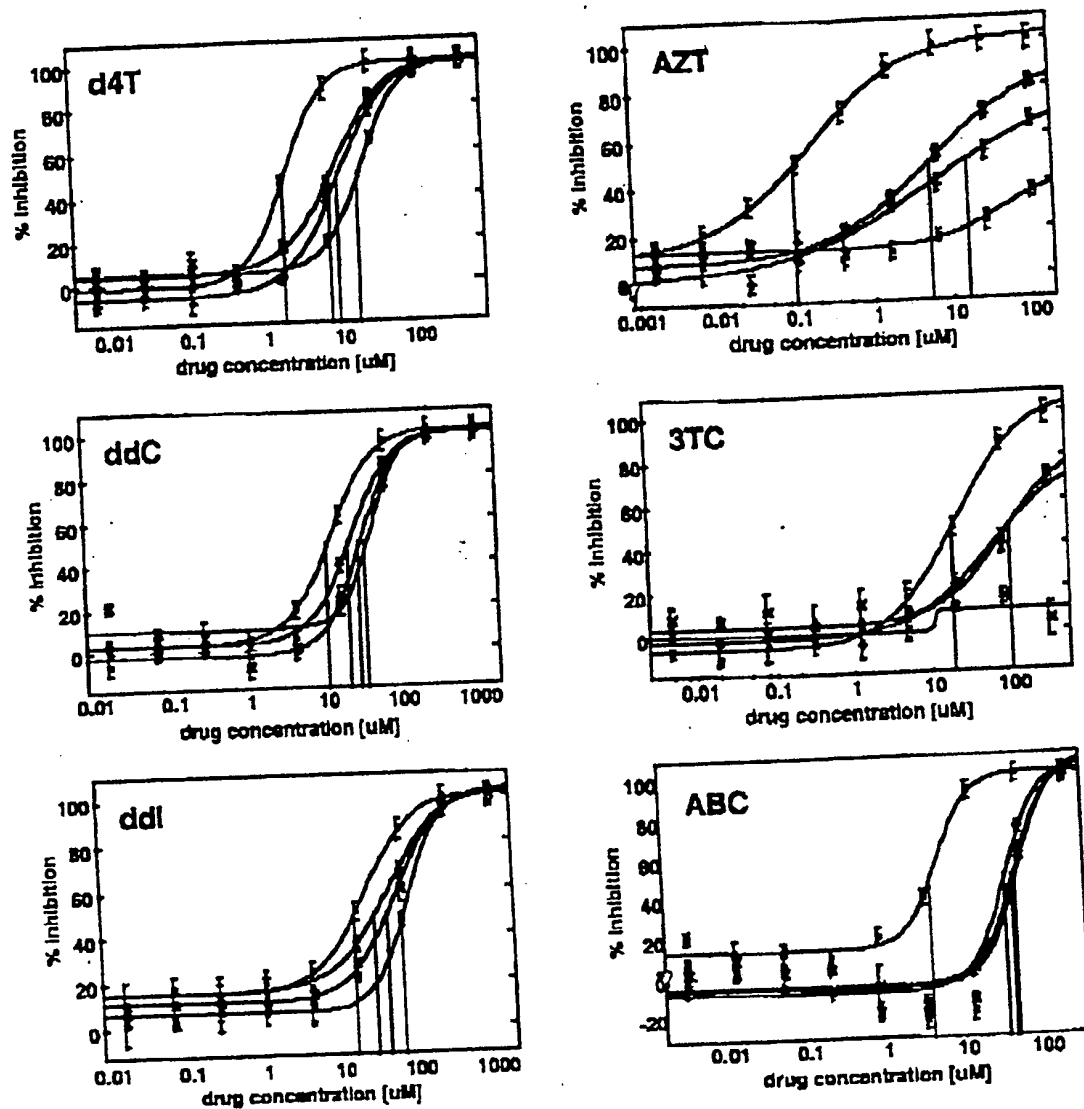


Figure 13

	AZT	3TC	ddC	d4T	ddI	ABC
Control	0.075316	10.8436	11.03691	1.776878	15.40917	4.024587
M41L+T69SSA+T215Y	15.30092	98.68274	20.94378	9.33691	29.54176	34.12945
M41L+A62V+T69SSA+T215Y	> 100	97.94111	29.20685	17.05966	47.08229	42.38207
M41L+A62V+T69SSA+M184V+T215Y	1.33321	> 100	38.6446	7.252411	41.36506	46.48806